

**TRANSESOPHAGEAL AND TRANSNASAL, TRANSESOPHAGEAL
ULTRASOUND IMAGING SYSTEMS**

ABSTRACT

5 A semi-invasive ultrasound imaging system for imaging biological tissue
includes a transesophageal probe or a transnasal, transesophageal probe connected
to a two-dimensional ultrasound transducer array, a transmit beamformer, a receive
beamformer, and an image generator. The two-dimensional transducer array is
disposed on a distal portion of the probe's elongated body. The transmit beamformer
10 is connected to the transducer array and is constructed to transmit several ultrasound
beams over a selected pattern defined by azimuthal and elevation orientations. The
receive beamformer is connected to the transducer array and is constructed to
acquire ultrasound data from the echoes reflected over a selected tissue volume.
The tissue volume is defined by the azimuthal and elevation orientations and a
15 selected scan range. The receive beamformer is constructed to synthesize image
data from the acquired ultrasound data. The image generator is constructed to
receive the image data and generate images that are displayed on an image display.
Preferably, the image generator is constructed to generate, from the image data,
several orthographic projection views over the selected tissue volume.